Small Satellite Transporter (SST)

Completed Technology Project (2012 - 2014)

Project Introduction

Scientists in the small satellite community have growing interest in using groups of small satellites to achieve a variety of mission of objectives. These mission concepts are becoming more complex by considering destinations beyond the delivery orbit such as deep space and plane changes in LEO. This project looks to further investigate the design of a unique payload adapter based small satellite transporter (SST) that will be able to take multiple small satellites to such destinations.

The primary objective is to determine whether this small satellite transporter is capable of transporting at least four 6U CubeSats is possible for a given set of mission scenarios. The effort will include:

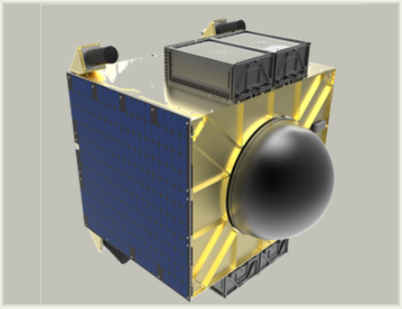
- Defining a mission trade space for both LEO and deep space missions
- Developing flight dynamics options and delta-v estimates for the set of chosen mission scenarios
- Conducting propulsion system trades with respect to propellant options, propulsion tanks, thruster types, etc. for each of the chosen mission scenarios
- Performing mechanical systems trades to investigate structural configurations with respect to the propulsion system results that would include a number of mass saving approaches
- Determining mission possibilities for the SST

Anticipated Benefits

The SST supports a number of GSFC deeps space CubeSat concepts.

Commercial space entities that are interested in advanced CubeSat missions would benefit from this technology.

Other agencies interested in advanced CubeSat missions would benefit from this technology.



Conceptual View of an SST

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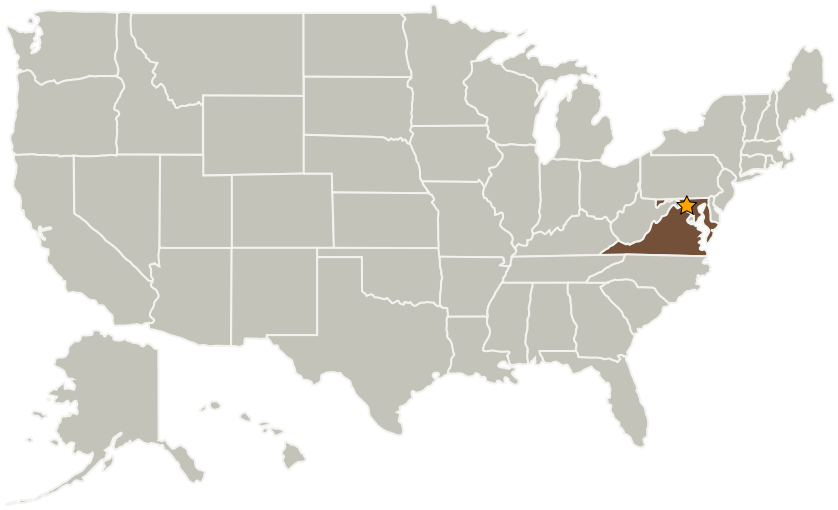


Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Virginia

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

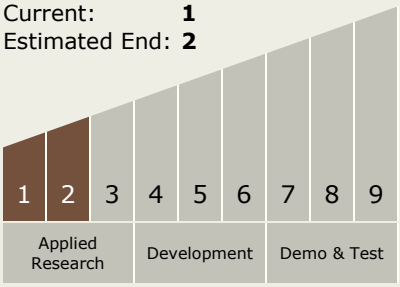
Wayne R Powell

Principal Investigator:

John D Hudeck

Technology Maturity (TRL)

Start: **1**
Current: **1**
Estimated End: **2**



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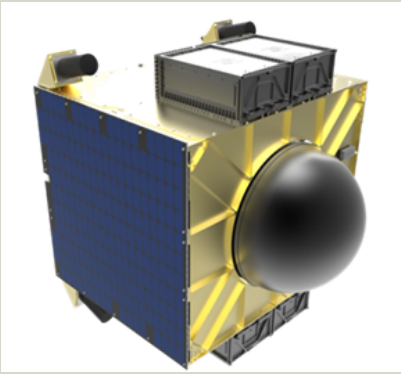
Images



Small Satellite Transporter Project (SST)
Conceptual View of an SST
(https://techport.nasa.gov/image/3988)

Project Website:

http://aetd.gsfc.nasa.gov/

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.4 Advanced Propulsion
    - TX01.4.4 Other Advanced Propulsion Approaches